Lat 41.86302 Lon -120.58829

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File Code: 3420 **Date:** October 28, 1998

Route To: 2430

Subject: Root Disease in Stand 23, Green Springs Timber Sale, Evaluation NE98-12

To: District Ranger, Devil's Garden RD, Modoc NF

Anne Mileck, District Silviculturist, asked me to determine if root disease was causing ponderosa pine mortality in Stand 23 in the Green Springs Timber Sale. Ms. Mileck, Dr. William Otrosina and I evaluated Stand 23 on October 8th for annosus root disease and black stain root disease. Dr. Otrosina is a plant pathologist and Leader of the Tree Root Biology Team with the USFS Forest Research Laboratory, Athens, GA who is currently researching black stain root disease in northeastern California. After evaluating the stand, Dr. Otrosina and I concluded that although some signs of past root disease activity were found, root disease was not causing the mortality in the stand. The observed was bark beetle related mortality caused by the western pine beetle earlier this decade when the trees were stressed by drought.

Stand 23 has a significant amount of mortality in mature ponderosa pine . The mortality is clumped in groups and appears to be several years old. The trees were probably killed during the prolonged period of below normal precipitation that ended earlier this decade. We removed bark and found bark beetle galleries which looked like they were made by western pine beetles. Later in the day, we consulted with Bruce Rottgering, retired USFS Entomologist, who confirmed that western pine beetles probably killed the trees when they were under moisture stress.

Since root disease may have been involved in the killing the pine trees, we looked for signs of root disease in many living and dead ponderosa pine and juniper trees and a few old pine stumps. We found a very old Heterobasidion annosum conk in an old pine stump. We also found some old black staining at the base of a dead pine tree in the wood under the bark which

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may have been caused by the fungal pathogen Leptographium wageneri which causes black stain root disease.

No root disease appears to be currently active in Stand 23. The foliage in the pine crowns looks green and full and no recent mortality was observed. After examining the stand, Dr. Otrosina and I concluded that root disease is not a problem. The thinning that is planned for this stand can proceed without adverse affects from root disease. As we discussed with Anne, the freshly cut stumps should be treated with borax to keep H. annosum spores from infecting the stumps and root systems. If you have further questions, please phone me at 252-6680.

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